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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,358	03/18/2002	Tara Cutler	MERCK 2388	9086

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EXAMINER

CALEY, MICHAEL H

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,358

Applicant(s)

CUTLER ET AL.

Examiner

Michael H. Caley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu et al. (European Application Publication EP 0838713).

Regarding claim 1, Shimizu discloses an optical compensator for a liquid crystal display comprising:

at least one O plate retarder (abstract, layer b)

at least one planar A plate retarder (abstract, layer c)

at least one negative C plate retarder (abstract, layer a).

Regarding claim 9, Shimizu discloses the optical retardation of the O plate as from 6 to 300 nm (Page 4 line 10).

Regarding claim 10, Shimizu discloses the optical retardation of the planar A plate as from 12 to 575 nm (Page 3 line 52).

Claims 1, 12, 13, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Winker et al. (U.S. Patent No. 5,504,603).

Regarding claim 1, Winker discloses an optical compensator for a liquid crystal display comprising:

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at least one O plate retarder (Figure 8)

at least one planar A plate retarder (Figure 8)

at least one negative C plate retarder (Figure 8).

Regarding claim 12, Winker discloses the planar A plate as a linear or crosslinked polymerized liquid crystalline material with a planar structure (Column 8 lines 6-23).

Regarding claim 13, Winker discloses the C plate as a negatively birefringent polymer film (Column 8 lines 6-23).

Regarding claim 17, Winker discloses a display device having:

a liquid crystal cell formed by two transparent substrates having surfaces which oppose each other, an electrode layer provided on the inside of at least one of the two transparent substrates (Column 5 lines 3-25);

a pair of polarizers sandwiching the substrates (Column 5 lines 11-17);

an optical compensator as described in claim 1 (Figure 8).

Regarding claim 18, Winker discloses the display device as a TN display (Column 5 lines 3-5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winker.

Regarding claim 2, Winker discloses all of the proposed limitations except for a single compensator portion on one side of a liquid crystal layer as having two negative C plates.

Winker, however, teaches an embodiment in which two negative C plates appear on opposite sides of the liquid crystal layer (Figure 8). Such an embodiment may be acknowledged as

— having multiple C plates in a single compensator. —

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included two negative C plates in an optical compensator for a liquid crystal display. Such an embodiment, as described by Winker, would have been advantageous to improve the contrast and color purity over a variety of viewing angles. One would have been motivated to construct the display as suggested by Winker to improve the versatility of the display and thus improve its marketability.

Regarding claim 3, Winker discloses all of the proposed limitations except for the C plate as situated between an O plate and a planar A plate. Winker, however, teaches an embodiment in which the C plate is situated between an A plate and an O plate on the opposite side of the liquid crystal layer (Figure 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed the C plate between the O plate and A plate as proposed. Such an embodiment, as described by Winker, would have been advantageous to improve the contrast and color purity over a variety of viewing angles. One would have been motivated to construct the display as suggested by Winker to improve the versatility of the display and thus improve its marketability.

Claims 4-8, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winker in view of Aminaka et al. (European Patent Application EP 0864906 "Aminaka").

Regarding claim 4-8 and 11, Applicant proposes typical characteristics of an O plate retarder. Winker fails to explicitly mention such characteristics, however, Aminaka teaches the specific attributes of another typical O-plate retarder in an analogous application: — — — — —

- Aminaka discloses the average tilt angle in the retarder as from 2 to 88 degrees (Page 6 lines 20-33).
- Aminaka discloses the tilt angled in the retarder as varying monotonously in a direction perpendicular to the plane of the film from a minimum value at one surface of the film to a maximum value at the opposite side of the film (Figure 7; Page 6 lines 20-33).
- Regarding claim 4, Aminaka discloses the minimum tilt angle in the retarder as from 0 to 80 degrees (Page 6 lines 30-33).
- Regarding claim 5, Aminaka '906 discloses the maximum tilt angle in the retarder as from 10 to 90 degrees (Page 6 lines 30-33).
- Aminaka discloses the preferred range of the thickness as from 0.5 μm to 30 μm .
- Aminaka discloses the layer as comprising a linear or crosslinked polymerized liquid crystalline material with a tilted or splayed structure (Page 8 lines 43-58, Page 9 lines 1-9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an O plate retarder such as used by Aminaka in the compensator

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disclosed by Winker. Both Winker and Aminaka disclose a conventional O plate retarder used in connection with additional retardation layers. One would have been motivated to use an O plate retarder such as taught by Aminaka in the application proposed by Winker in order to benefit from a functional O plate having correct attributes for tilt angle along the thickness of the plate and a functional material. Such a construction for an O plate is old and well known in the art of optical compensators and one of ordinary skill in the art would have been motivated to construct one as such to benefit from the expected results from the use of such a device. The use of an O plate as proposed would have enhanced the contrast and color purity of the device at wide viewing angles.

Regarding claim 14, Winker fails to explicitly mention the material used for constructing the negatively birefringent C plate. Aminaka, however, discloses a DAC film as the material of construction for a negatively birefringent C plate (Page 12 lines 49-58, Page 13 lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a DAC film as a material of construction for the negatively birefringent C plate. One would have been motivated to use a DAC film as a construction material such as taught by Aminaka in the application proposed by Winker in order to benefit from a functional C plate having correct attributes for providing a desired retardation. Such a construction for a C plate is old and well known in the art of optical compensators and one of ordinary skill in the art would have been motivated to construct one as such to benefit from the expected results from the use of such a device. The use of a C plate as proposed would have enhanced the contrast and color purity of the device at wide viewing angles.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winker in view of Kaneko (U.S. Patent No. 6,417,903).

Regarding claim 15, Winker discloses all of the proposed limitations except for the C plate as comprising a linear or crosslinked polymerized chiral liquid crystalline material with a helically twisted structure. Kaneko, however, teaches such a C-plate used in combination with a retardation layer in order to provide circularly polarized light and enabling a metallic color display (abstract, Figures 1 and 6 elements 9, 10, 61, and 62, Column 6 lines 33-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an additional chiral liquid crystalline C plate as a means of obtaining a circularly polarized light as taught by Kaneko. One would have been motivated to add such a polymer film to the retardation layer disclosed by Winker in order to improve the quality of a desired color range. Such an embodiment of a compensation layer would have been advantageous to enable a metallic color display as taught by Kaneko.

Regarding claim 16, Winker and Kaneko fail to disclose the helical pitch of the chiral liquid crystalline material in the C plate as less than 250 nm. Kaneko, however, teaches an embodiment in which the pitch is lowered to 300 nm in order to lower the center scattering wavelength of the device to change the display color of the device (Column 8 lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have lowered the pitch of the C plate to lower than 250 nm in order to lower the scattering wavelength of the device and thus change the display color. As taught by Kaneko, the pitch of the plate may be optionally changed in order to change the display color of the device. It would have been an engineering expediency to have changed the pitch to less than 250 nm in

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order to obtain a desired scattering wavelength and display color of the device with enhanced visibility from wide viewing angles.


Any inquiry concerning this communication or earlier communications from the

- examiner should be directed to Michael H. Caley whose telephone number is (703) 305-7913.

The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


mhc
May 17, 2003


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
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